

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the present application:

Claims 1-3 (Cancelled).

4. (Currently Amendment) [The] A catalyst comprising a mixed metal oxide having the empirical formula



wherein N is at least one element selected from the group consisting of Te and Sb, wherein X is at least one element selected from the group consisting of Nb, Ta, Ti, W, Se, Al, Zr, Cr, Mn, Fe, Ru, Co, Rh, Ni, Pt, Bi, B, In, As, Ge, Sn, Li, Na, K, Rb, Cs, Fr, Be, Mg, Ca, Sr, Ba, Ra, Hf, Pb, P, Pm, Eu, Gd, Dy, Ho, Er, Tm, Yb and Lu, wherein Z is at least one element selected from the group consisting of Au, Ag, Re, Pr, Zn, Ga, Pd, Ir, Nd, Y, Sm, Tb, Br, Cu, Sc, Cl, F and I, and wherein, when $a = 1$, $b = 0.01$ to 1.0 , $c = 0.01$ to 1.0 , $d = 0.01$ to 1.0 , $e = 0$ to 0.1 and f is dependent on the oxidation state of said other elements, produced by the process [according to claim 1] comprising:

(a) admixing compounds of elements Mo, V, N, X and Z and at least one solvent at a temperature greater than or equal to 45C to form an admixture, wherein Mo, V, N, X and Z are present in such amounts that the atomic ratio of Mo:V:N:X:Z is $a:b:c:d:e$, and, when $a=1$, $b=0.01$ to 1.0 , $c=0.01$ to 1.0 , $d=0.01$ to 1.0 and $e=0$ to 0.1 ;

(b) removing said at least one solvent from the so-formed admixture to form a catalyst precursor; and

(c) calcining said catalyst precursor to obtain said mixed metal oxide.

5. (Currently Amended) A process for producing an unsaturated carboxylic acid which comprises subjecting an alkane, or a mixture of an alkane and an alkene, to a vapor phase catalytic oxidation reaction in the presence of a catalyst comprising a mixed metal oxide having the empirical formula



wherein N is at least one element selected from the group consisting of Te and Sb, wherein X is at least one element selected from the group consisting of Nb, Ta, Ti, W, Se, Al, Zr, Cr, Mn, Fe, Ru, Co, Rh, Ni, Pt, Bi, B, In, As, Ge, Sn, Li, Na, K, Rb, Cs, Fr, Be, Mg, Ca, Sr, Ba, Ra, Hf, Pb, P, Pm, Eu, Gd, Dy, Ho, Er, Tm, Yb and Lu, wherein Z is at least one element selected from the group consisting of Au, Ag, Re, Pr, Zn, Ga, Pd, Ir, Nd, Y, Sm, Tb, Br, Cu, Sc, Cl, F and I, and wherein, when $a = 1$, $b = 0.01$ to 1.0 , $c = 0.01$ to 1.0 , $d = 0.01$ to 1.0 , $e = 0$ to 0.1 and f is dependent on the oxidation state of said other elements, prepared by the process comprising:

(a) admixing compounds of elements Mo, V, N, X and Z and at least one solvent at a temperature greater than or equal to 45°C to form an admixture, wherein Mo, V, N, X and Z are present in such amounts that the atomic ratio of Mo:V:N:X:Z is $a:b:c:d:e$, and, when $a=1$, $b=0.01$ to 1.0 , $c=[0.1]$ 0.01 to 1.0 , $d=0.01$ to 1.0 and $e=0$ to 0.1 ;

(b) removing said at least one solvent from the so-formed admixture to form a catalyst precursor; and

(c) calcining said catalyst precursor to obtain said mixed metal oxide.

6. (Currently Amended) A process for producing an unsaturated nitrile which comprises subjecting an alkane, or a mixture of an alkane and an alkene, and ammonia to a vapor phase catalytic oxidation reaction in the presence of a catalyst comprising a mixed metal oxide having the empirical formula



wherein N is at least one element selected from the group consisting of Te and Sb, wherein X is at least one element selected from the group consisting of Nb, Ta, Ti, W, Se, Al, Zr, Cr, Mn, Fe, Ru, Co, Rh, Ni, Pt, Bi, B, In, As, Ge, Sn, Li, Na, K, Rb, Cs, Fr, Be, Mg, Ca, Sr, Ba, Ra, Hf, Pb, P, Pm, Eu, Gd, Dy, Ho, Er, Tm, Yb and Lu, wherein Z is at least one element selected from the group consisting of Au, Ag, Re, Pr, Zn, Ga, Pd, Ir, Nd, Y, Sm, Tb, Br, Cu, Sc, Cl, F and I, and wherein, when $a = 1$, $b = 0.01$ to 1.0 , $c = 0.01$ to 1.0 , $d = 0.01$ to 1.0 , $e = 0$ to 0.1 and f is dependent on the oxidation state of said other elements, prepared by the process comprising:

- (a) admixing compounds of elements Mo, V, N, X and Z and at least one solvent at a temperature greater than or equal to 60°C to form an admixture, wherein Mo, V, N, X and Z are present in such amounts that the atomic ratio of Mo:V:N:X:Z is $a:b:c:d:e$, and, when $a=1$, $b=0.01$ to 1.0 , $c=[0.1]$ 0.01 to 1.0 , $d=0.01$ to 1.0 and $e=0$ to 0.1 ;
- (b) removing said at least one solvent from the so-formed admixture to form a catalyst precursor; and
- (c) calcining said catalyst precursor to obtain said mixed metal oxide.